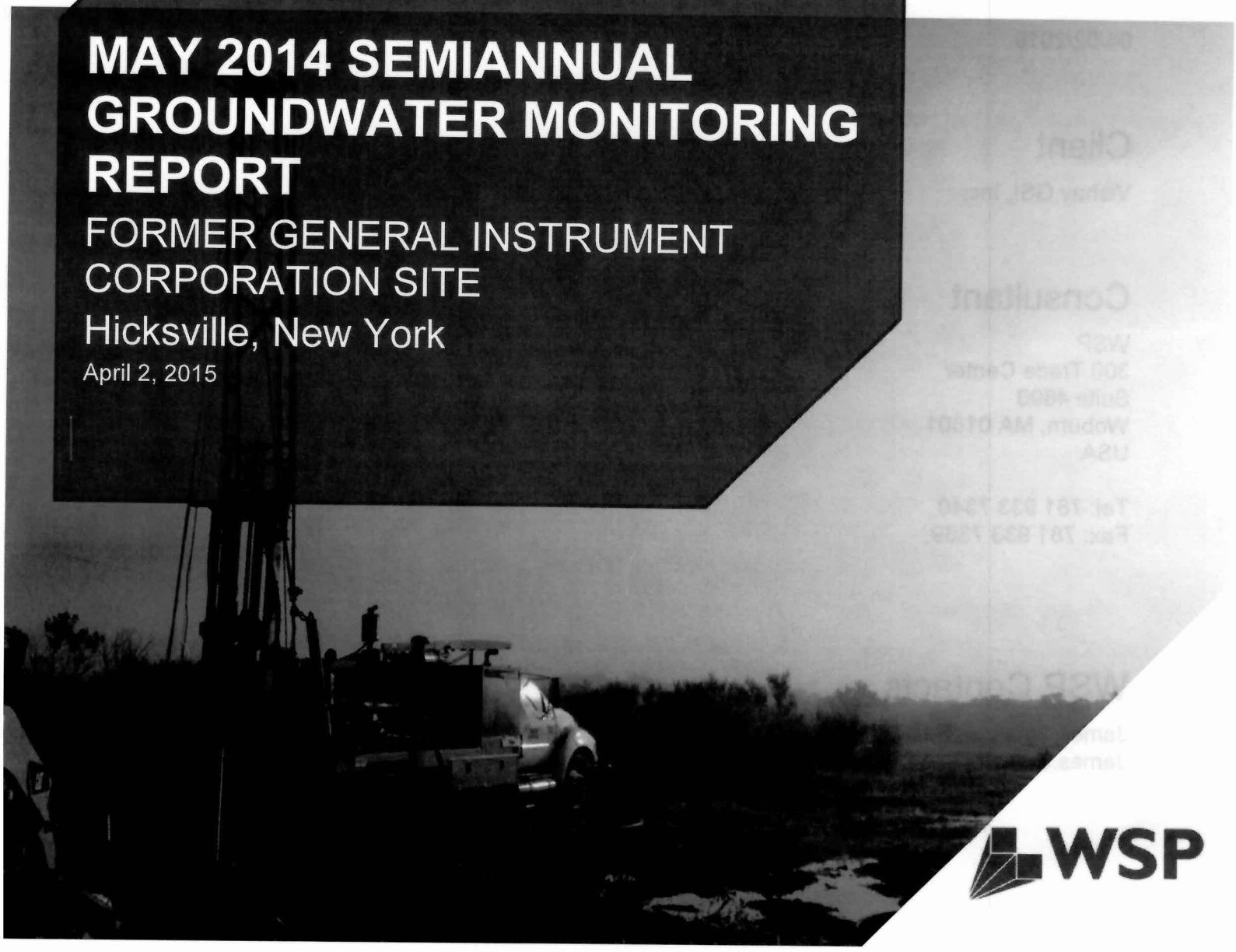
MAY 2014 SEMIANNUAL GROUNDWATER MONITORING REPORT

FORMER GENERAL INSTRUMENT CORPORATION SITE

Hicksville, New York

April 2, 2015



WSP

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FORMER GENERAL INSTRUMENT CORPORATION SITE

04/02/2015

Client

Vishay GSI, Inc.

Consultant

WSP
300 Trade Center
Suite 4690
Woburn, MA 01801
USA

Tel: 781 933 7340
Fax: 781 933 7369

WSP Contacts

James Sobieraj, P.E.
James.Sobieraj@WSPGroup.com

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1 Introduction

On behalf of Vishay GSI, Inc. (VGSI), WSP USA Corp. is pleased to present this *May 2014 Semiannual Groundwater Monitoring Report* for the former General Instrument Corporation (GIC) site located in Hicksville, New York (Figure 1).

Historical releases of solvents from the former GIC site, as well as documented releases from numerous other sites, have contributed to regional groundwater plumes of volatile organic compounds (VOCs). A known source of VOCs, the former Sylvania Electric Products, Inc. facility, is located immediately north and upgradient of the former GIC site at 70-140 Cantiague Rock Road. Figure 2 shows the locations of several facilities near the former GIC site known to have historically used chlorinated solvents.

VGSI, the corporate successor to GIC, is currently conducting all investigative and remedial work associated with the former GIC site in accordance with the Order on Consent (#W1 0236 88 07) signed by GIC on December 4, 1989, and the New York State Department of Environmental Conservation (NYSDEC) on January 16, 1990. In 2010, the NYSDEC referred the regional VOC plumes to the U.S. Environmental Protection Agency (EPA) for potential listing on the National Priorities List (NPL). On September 16, 2011, the New Cassel/Hicksville Groundwater Contamination Site was finalized onto the NPL (EPA ID# NYD0001095363). In August 2013, the EPA contacted VGSI and requested information pursuant to Section 104(e) of the Comprehensive Environmental Response and Compensation Liability Act (CERCLA). VGSI responded to the USEPA's request in a letter dated September 27, 2013.

The purpose of this report is to summarize data collected to monitor the migration of VOCs in groundwater originating from the former GIC site while the remedial investigation/feasibility study (RI/FS) process is being completed. Because releases at the former Sylvania site occurred immediately upgradient of the former GIC site, the plumes from the two sites have partially commingled. In addition, as the monitoring network extends offsite approximately 4,600 feet into a historically industrial area, some of the detected VOCs are also likely attributable to sources other than the former GIC and former Sylvania sites.

This report was prepared in accordance with the *Interim Groundwater Monitoring Plan* (IGMP; ESC Engineering 2004) as modified by the changes to the monitoring program that have been documented in previous groundwater monitoring reports. Water level data were collected from 38 monitoring wells (including the two sentinel wells) to evaluate potentiometric surface(s) in the area, and groundwater samples were collected from 23 monitoring wells (including the two sentinel wells and the Phase VI Remedial Investigation [RI] wells) and analyzed for VOCs.

1.1 Site Description and Ownership History

The former GIC site is located at 600 West John Street, northeast of the intersection of West John Street and Cantiague Rock Road in Hicksville, New York (Figure 1). The 11.5 acre site is located in a light industrial section of Hicksville and was developed in 1960 for General Transistor, who was subsequently acquired by GIC. GIC used the facility, including two, one-story buildings and one, two-story building, for the research, design, and manufacturing of semiconductors, radar systems, and electronic equipment until operations ceased in 1994. 600 West John LLC currently owns the property and leases the buildings to industrial and commercial tenants. The site is surrounded by industrial and commercial properties where similar VOCs were historically used, including the former Sylvania site, the former Hercules site, the former Anchor Chemical site, the Sulzer METCO site, the former Harris PRD site (now Westbury Realty), the former Depew Manufacturing site, the former Autoline Automotive site, and the 89 Frost Street site (Figure 2).

2 Groundwater Flow

The former GIC site is underlain by 1,100 feet of unconsolidated material and soils consisting of gravelly sand (0 to 40 feet below ground surface [bgs]), fine to medium sand (40 to 100 feet bgs), and silty fine sand (greater than 100 feet bgs). The Magothy formation, which underlies the Upper Glacial Aquifer, is the primary drinking water source for Long Island.

On May 12, 2014, water level measurements were collected from 38 groundwater monitoring wells listed in Table 1 and shown on Figure 3. The water level data collected during this sampling event are provided in Table 1, while historical water level data are provided in Table 2.[1] At the time the water level data were collected, the soil vapor extraction (SVE) system and the Interim Remedial Measure (IRM) system were not in operation.[2]

Water levels in May 2014 were approximately 0.18 feet lower on average than in November 2013. Since 2002, groundwater elevations have increased and have remained relatively stable with little fluctuations since May 2010. The May 2014 elevations are approximately 10 feet higher than elevations measured in August 2002, when routine water level monitoring began.

Figures 4 through 7 depict the potentiometric surface for the following subsets of monitoring wells based on contouring of the water level data collected during the May 2014 sampling event: wells screened less than 120 feet bgs (Figure 4), wells screened between 120 and 200 feet bgs (Figure 5), and wells screened greater than 200 feet bgs (Figure 6). Figure 7 depicts a composite potentiometric surface based on select groundwater monitoring wells. This composite potentiometric surface was generated by selecting those groundwater hydraulic heads associated with the VOC concentrations that represent the highest concentrations in the investigation area. Evaluating the analytical data in conjunction with the groundwater elevations allows an interpretation of how the VOCs are moving in groundwater within the investigation area. The groundwater contours represent the flow regime through which the constituents are migrating as they move horizontally and vertically downgradient.

The groundwater flow directions for the shallow, intermediate, and deep subsets of wells are consistent with the historical groundwater data collected at the site. As shown in Figure 4, the predominant groundwater flow direction in the upper portion of the shallow aquifer is to the south with a slight western component near the former GIC site. In the intermediate and deep zones, the groundwater flow direction is to the south-southwest (Figures 5 and 6). Finally, the groundwater flow direction illustrated by the composite potentiometric surface (shown in Figure 7) is also to the south-southwest.

Water levels measured in monitoring well clusters also provide information on the vertical groundwater flow component within the aquifer. The vertical gradients ($[dh/dl]_{vert}$) for several well clusters were calculated using the following equation:

$$(dh/dl)_{vert} = (h_{W2} - h_{W1})/l_{W1,W2}$$

Where:

h_{W2} = hydraulic head in the deeper well

h_{W1} = hydraulic head in the shallower well

$l_{W1,W2}$ = vertical distance between the top of the screens in the wells

Based on the above equation, a negative vertical gradient indicates a downward flow direction and a positive vertical gradient indicates an upward flow direction.

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[1] The water level measurement from well W-30-285 was collected but is likely erroneous based on historical data and water level measurements from surrounding wells. Therefore, this well was not included in the development of the water level contour figures described below.

[2] Operation of Unterdruck-Verdampfer-Brunner well (UVB-1) was effectively stopped on June 4, 2008, due to the uncontrollable flow of very fine grained sand into the well. Wells UVB-2 and UVB-3 were manually turned off on May 20, 2009. The SVE system was turned off on September 19, 2012 in preparation for soil verification sampling. The soil analytical results demonstrated that operation of the SVE system has achieved the soil remedial goals. Therefore the SVE system has not been restarted and remains off.

Vertical gradients were determined from water level measurements in well clusters W-03, W-10, W-12, W-19, W-20, W-25, W-27, W-36, and the sentinel wells (S-1). In the shallow portion of the aquifer, the vertical gradient is -0.0038, -0.0186, and -0.0004 feet per foot (ft/ft) for well clusters W-03, W-10, and W-12, respectively. For well clusters screened in both the shallow and intermediate portions of the aquifer, the vertical gradients are 0.0003, -0.0045, and -0.0026 ft/ft for well clusters W-19, W-20, and W-25, respectively. For the intermediate and deeper portions of the aquifer, the gradients are -0.0071, 0.0004, and -0.0034 ft/ft for well clusters W-27, W-36, and S-1, respectively. With the exception of the monitoring well clusters W-19 and W-36, these vertical gradients indicate a downward component to the groundwater flow direction, which is consistent with the interpretation presented in Figure 7. The magnitude of the vertical gradients observed in May 2014 was generally similar to those observed in November 2013.

3 Onsite Groundwater Monitoring Results and Trend Analysis

During the May 2014 sampling event, five groundwater monitoring wells were sampled on the former GIC site. Four of these wells are screened less than 120 feet bgs (W-01-75, W-10-120, W-22-95, and W-32-110), and onsite monitoring well W-14-150 is screened in the intermediate interval between 120 and 200 feet bgs. In addition, one equipment blank and one trip blank were collected for quality assurance/quality control (QA/QC) purposes. All of the samples were analyzed for VOCs, including dichlorobenzenes (DCBs), by USEPA Method 8260C. The samples were packaged and shipped via FedEx to the TestAmerica laboratory in Edison, New Jersey for analysis. A standard 2-week turnaround timeframe was requested.

The results of the VOC analyses from onsite groundwater samples (including the trip blank and equipment blank) collected in May 2014 are summarized in Table 3. Available historical VOCs concentrations detected in samples from these wells are included on Table 4. A Level I laboratory analytical report for these samples can be found in Appendix A, while a Data Usability Summary Report (with annotated Form 1s and support documentation) is included in Appendix B. A complete Level IV Laboratory Report with laboratory QA/QC data is included in Appendix C. Cross-section locations and schematics depicting the screened intervals of the wells and respective VOCs concentrations are presented on Figures 8 and 9, respectively. Chloroform was estimated below method reporting limits in the equipment blank at 0.22 micrograms per liter (µg/l). Methylene chloride, a common laboratory contaminant, was detected in the trip blank at 1.0 µg/l. There were no other VOCs detected in the QA/QC samples.

Similar to previous sampling events, PCE and TCE were the predominant compounds detected in the samples collected from the five onsite wells. PCE was detected above reporting limits in each of the samples from the onsite monitoring wells. The PCE concentration in well W-22-95 (11 µg/l) remains lower than historical results. TCE was detected above the reporting limit in two onsite monitoring wells (W-01-75 and W-22-95), with a maximum concentration of 100 µg/l in monitoring well W-01-75. 1,2-DCB was only detected above the reporting limit in the sample from monitoring well W-01-75 (24 µg/l).

4 Offsite Groundwater Monitoring

During the May 2014 sampling event, samples were collected from 18 offsite monitoring wells, including the two sentinel wells and four additional wells installed as part of the Phase VI RI. Blind duplicate samples labeled W-100 and W-101 were collected from offsite monitoring wells W-16-148 and W-27-285, respectively. Monitoring well W-23-110 is the only sampled offsite monitoring well screened less than 120 feet bgs. Five sampled wells are screened between 120 and 200 feet bgs, while the remaining 12 sampled wells are screened at depths greater than 200 feet bgs. The samples were analyzed by TestAmerica of Edison, New Jersey, for VOCs, including DCBs, using EPA Method 8260C within a standard 2-week turnaround time.

A summary of analytical results for the May 2014 samples collected from the offsite monitoring wells is presented in Table 3 and on Figure 9, while available historical sampling results are provided in Table 4. A Level I laboratory analytical report for these samples can be found in Appendix A, while a Data Usability Summary Report (with annotated Form 1s and support documentation) is included in Appendix B. A complete Category B Laboratory Report with laboratory QA/QC data is included in Appendix C.

4.1 Northern King Kullen Property Wells

Two offsite monitoring wells located on the northern portion of the King Kullen property (W-16-148 and W-23-110; Section A-A' on Figures 8 and 9) were sampled in May 2014. A blind duplicate sample labeled W-100 was collected from well W-16-148 for QA/QC purposes. PCE and TCE were the predominant VOCs detected in samples from both wells. 1,2-DCB was not detected above reporting limits in samples collected from either well.

The PCE concentration in the sample collected from monitoring well W-16-148[3] decreased from 6,100 to 4,400 µg/l between November 2013 and May 2014, while the TCE concentration decreased from 110 to 61 µg/l. The relative percentage of PCE in samples from well W-16-148 continues to be high (67.6 to 98.3 percent with a one-time outlier of 25.7 percent during the initial sampling of this well in May 1997). The historically high relative percentage of PCE together with the general absence of 1,2-DCB in the samples from monitoring well W-16-148 indicates a primary source other than the former GIC site.

The PCE concentration in the sample collected from monitoring well W-23-110 increased from a concentration typical of previous sampling results (6.4 µg/l) in November 2013 to a historic high (47 µg/l) in May 2014. The TCE concentration in this well in May 2014 (1.2 µg/l) was similar to the November 2013 result (1.8 µg/l).

4.2 Southern King Kullen Property and Former Harris PRD Site Wells

Six offsite monitoring wells were sampled along the southern boundary of the King Kullen property (W-18-150, W-19-150, W-20-160, and W-34-285; Section B-B' on Figure 9) and on the former Harris PRD site to the west (W-24-260 and W-25-188).

Similar to previous sampling events, PCE and TCE were detected above reporting limits in all six of these wells. Of note, PCE concentrations decreased in each of these samples from November 2013 to May 2014. 1,2-DCB was detected above reporting limits in four of the six wells. Similar to historical trends, 1,2-DCB was not detected in monitoring well W-19-150, the easternmost well in the transect.

Similar to the well transects located upgradient, the historical relative percentage of PCE ranged from 57.0 to 92.0 percent for the westernmost well (W-24-260) and from 72.8 to 97.2 percent for the easternmost well (W-19-150). These results, together with either non-detectable or very low concentrations of 1,2-DCB in the samples from these two wells, indicate a primary source other than the former GIC site. It should be noted that Harris PRD (formerly PRD Electronics) produced microwave test equipment on the current Westbury Realty

[3] Results reported in the text represent the maximum result reported in either the primary sample or its duplicate.

property during a time period that overlapped with GIC's historical manufacturing operations. Based on publicly available databases, Harris PRD was a generator of D001 (ignitable), D002 (corrosive), F001 (spent halogenated solvents used in degreasing), F002 (spent halogenated solvents), K095 (distillation bottoms from the production of 1,1,1-trichloroethane [TCA]), and U009 (2 propenenitrile or acrylonitrile) wastes. In addition, historical aerial photographs show a recharge basin on the former Harris PRD site. Despite these operational practices, according to publicly available databases, no subsurface investigations have been completed on the site other than those completed by VGSI.

4.3 Ackerman and NYS Park Service Property Wells

In May 2014, four offsite monitoring wells were sampled along the southern boundary of the Ackerman property (W-26-270, W-27-240, W-27-285, and W-30-285) as shown in Section C-C' on Figure 9. The three monitoring wells on the eastern boundary of the NYS Park Service property (W-35-240, W-35-315, and W-35-380), which were previously included in the IGMP, were damaged during activities related to the construction of the Neptune^{RTS} converter station and were subsequently abandoned with the approval of the NYSDEC in May 2007. A blind duplicate sample labeled W-101 was also collected from well W-27-240 for QA/QC purposes.

Similar to previous sampling events, PCE, TCE, and cis-1,2-dichloroethene (DCE) were the predominant compounds detected in samples from these wells. The PCE concentration decreased in samples from each of these wells, most notably in monitoring well W-26-270 in which the PCE concentration decreased from 370 µg/l in November 2013 to an historical low of 150 µg/l in May 2014. Similar to the line of easternmost upgradient wells, W-12-120, W-16-148, and W-19-150, the relative percentage of PCE in wells W-26-270 and W-30-285 continues to range from 82.6 to 100 percent (with one outlier of 66.5 percent in well W-30-285 during the initial sampling event in August 2002), indicating a source other than the former GIC site. Vinyl chloride was detected in three of the four wells at concentrations ranging from 3.0 µg/l in monitoring well W-30-285 to 39 µg/l in the sample from monitoring well W-27-285. Generally, as the depth and downgradient distance from the former GIC site increases, the presence of vinyl chloride, a degradation product of PCE and TCE, also increases. 1,2-DCB was detected above the reporting limit in samples from each of these wells at concentrations similar to historical results.

4.4 Sentinel Wells

During this sampling event, the two-downgradient sentinel wells (S-1-325 and S-1-450), located in Park H 9 south of the site, were also sampled. While several VOCs were detected in these wells at concentrations above reporting limits, 1,2-DCB was again not detected in samples collected from either of the sentinel wells. PCE and TCE were the predominant compounds detected. The PCE concentration decreased in the sample collected from the deeper sentinel well, S-1-450, from November 2013 (an estimated result[4] of 480 µg/l) to May 2014 (300 µg/l). The TCE concentration in sentinel well S-1-450 increased slightly from May 2013 (150 µg/l) to November 2013 (160 µg/l).

4.5 Phase VI RI Wells

In November 2008, four additional groundwater monitoring wells (W-36-390, W-36-448, W-37-325, and W-37-385) were installed as part of the Phase VI RI. The wells were initially sampled in March 2009 and have been incorporated into the semiannual groundwater sampling events. The predominant compounds detected in these wells were PCE, TCE, and cis-1,2-DCE with higher concentrations detected in the shallower wells.

In the W-36 well cluster, the PCE concentration increased in the sample collected from the shallow well (from 98 to 140 µg/l) and generally remained the same in the deeper well from November 2013 to May 2014. The TCE

[4] The percent recovery of PCE in the matrix spike/matrix spike duplicate (MS/MSD) for S-1-450 was below the lower control limit. The result was qualified during validation as estimated.

concentration decreased in the sample collected from the shallow well (from 790 to 730 µg/l) and increased in the sample collected from the deeper well (from 140 to 160 µg/l) from November 2013 to May 2014.

In the W-37 well cluster, the PCE concentration in May 2014 increased in the sample collected from the shallow monitoring well from 180 to 200 µg/l, but was similar to the November 2013 result in the sample collected from the deeper monitoring well. The TCE concentrations increased from November 2013 to May 2014 in the samples collected from the shallow (400 to 440 µg/l) and deep (83 to 91 µg/l), respectively. Samples from both W-37 wells continue to contain elevated concentrations of carbon tetrachloride and chloroform, which are not VOCs associated with the former GIC site.

5 Conclusions and Adjustments to the Monitoring Program

The consistent general reduction in VOCs related to the former GIC site in groundwater samples collected onsite and at the northern King Kullen property line provide direct evidence of the success of the onsite source control measures. The high relative percentage of PCE contained in samples from many of the monitoring wells demonstrate that much of the VOCs detected in the monitored portion of the aquifer, including the highest concentrations, are attributable to offsite sources other than the former GIC site.

After each sampling event, WSP evaluates the conditions of the monitoring wells and the specified sampling program to determine if any wells should be recommended for addition to or deletion from the monitoring program. No changes to the existing sampling program are recommended at this time. A detailed list of wells to be sampled in November 2014 is included in Table 5.

6 References

ESC Engineering of New York, P.C. 2004. Interim Groundwater Monitoring Plan, Former General Instrument Corporation Site, Hicksville, New York. June 3.

ELAP. 2013. SW 846 Methods to be Delisted on October 1, 2013. Email Communication to Laboratories from the New York State Department of Health-ELAP. May 5.

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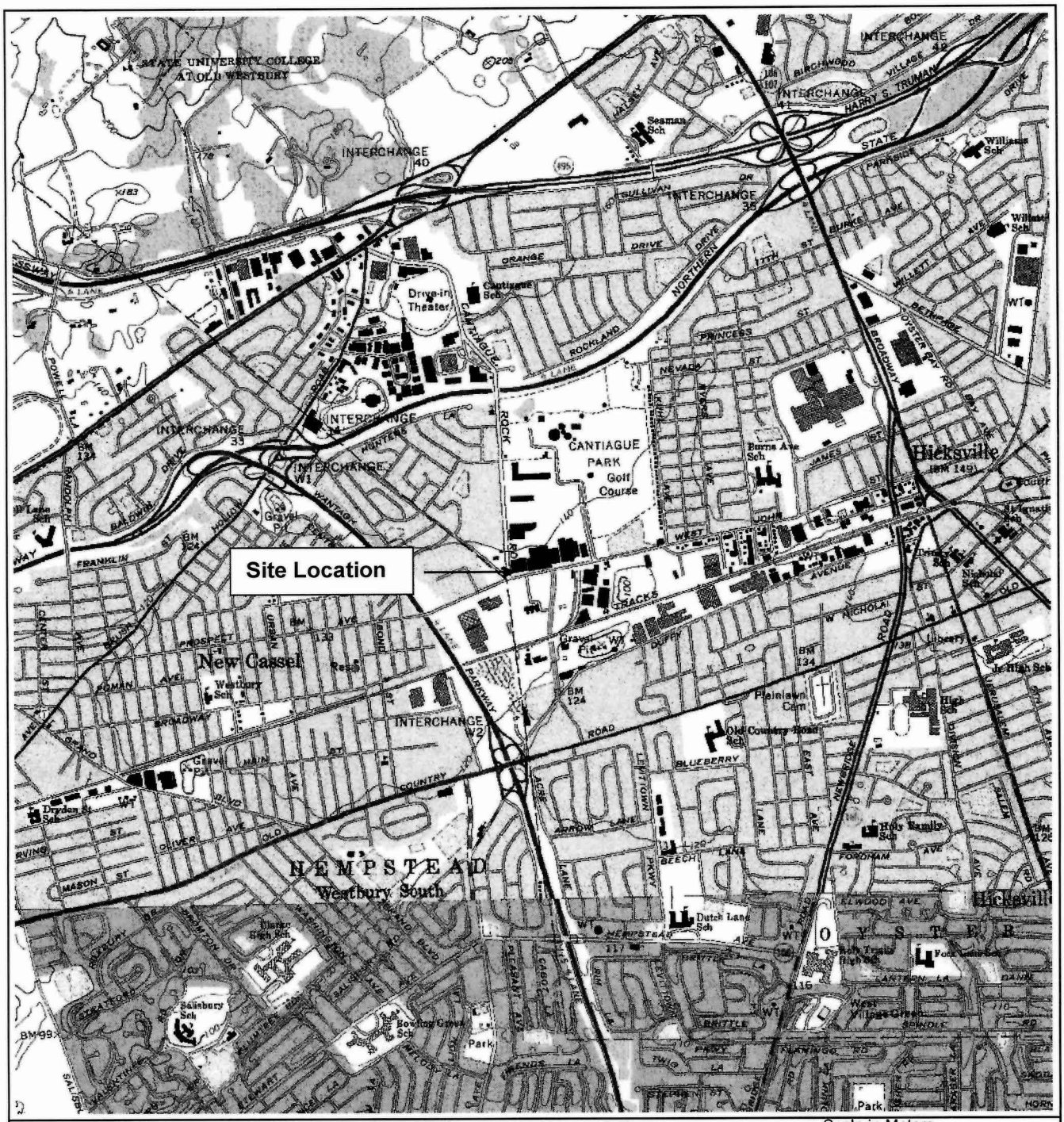
7 Acronyms

µg/l	micrograms per liter
bgs	below ground surface
CERCLA	Comprehensive Environmental Response and Compensation Liability Act
DCB	dichlorobenzene
DCE	dichloroethylene
ELAP	Environmental Laboratory Approval Program
EPA	U.S. Environmental Protection Agency
ft/ft	feet per foot
GIC	General Instrument Corporation
IGMP	Interim Groundwater Monitoring Plan
IRM	Interim Remedial Measure
MS/MSD	matrix spike/matrix spike duplicate
NPL	National Priorities List
NYSDEC	New York State Department of Environmental Conservation
NYSDOH	New York Stated Department of Health
PCE	tetrachloroethylene
QA/QC	quality assurance/quality control
RI	Remedial Investigation
RI/FS	remedial investigation/feasibility study
SVE	soil vapor extraction system
TCA	trichloroethane
TCE	trichloroethylene
UVB	Unterdruck-Verdampfer-Brunner
VGSI	Vishay GSI, Inc.
VOCs	volatile organic compounds

Figures



WSP USA Corp.
300 Trade Center, Suite 4690
Woburn, Massachusetts 01801
(781) 933-7340

Figure 1
Site Location
Former General Instrument Corporation Site
Hicksville, New York